

Subcapsular Hepatic Hematoma after ERCP: A Case Report and Revision of Literature

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Abstract

Introduction: Endoscopic retrograde cholangiopancreatography (ERCP) is a minimally invasive procedure for diagnosis and treatment of biliary and pancreatic diseases. Even in the best hands, complications may occur. Clinically significant hemorrhagic complications associated usually to previous papillotomy are uncommon. Subcapsular hepatic hematoma is exceptional, with only twenty cases described. We present a case of a 52-year-old man who developed a large subcapsular liver hematoma following a therapeutic ERCP. Due to serious anemization and hemodynamic instability, arterial embolization and finally urgent surgical evacuation of the hematoma were performed. In the postoperative period the patient presented infection of the collection, which indicated colocation of percutaneous drainage and broad-spectrum intravenous antibiotics, and gradually recovered.

Keywords

Subcapsular Hepatic Hematoma; Endoscopic Retrograde Cholangiopancreatography; Arterial Embolization; Percutaneous Drainage; Surgery

1. Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is a minimally invasive procedure for diagnosis and treatment of biliary and pancreatic diseases. Even in the best hands, complications occur in 2% - 10% of cases [1]. Clinically significant hemorrhagic complications associated usually with previous papillotomy are uncommon, although endoscopically visible bleeding is quite frequent [2].

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On the other hand, subcapsular hepatic hematoma is exceptional, with fewer than twenty cases described worldwide since 2000, when the first case was published [3].

In this report we describe a case of subcapsular hepatic hematoma following ERCP, analyze possible mechanisms of its production and present a revision of current literature.

2. Case Presentation

We present a case of a 52-year-old man with a past medical history of chronic pancreatitis requiring surgical necrosectomy who was admitted to our hospital due to a new exacerbation. Endoscopic ultrasonography demonstrated presence of lithiasis in the main pancreatic duct (**Figure 1**). Subsequently, ERCP with biliar sphincterotomy over a 0.035-inch diameter guidewire was performed, without difficulty. However, duodenal intubation was laborious due to repeated loop formation. Eventually, pancreatic tree canalization and pancreatic sphincterotomy were successfully realized. In spite of various attempts, it was impossible to extract the pancreatic stones.

Over the following six hours, the patient developed right-sided upper abdominal pain with no clear sign of abdominal tenderness. The hemoglobin level declined from 14 g/dL to 8 g/dL. An urgent abdominal computed tomography (CT) scan revealed subcapsular hematoma surrounding the whole right hepatic lobe, with dimensions of $19 \times 17.8 \times 6.9$ cm (**Figure 2**). Due to new anemization, despite blood transfusions, and hemodynamic

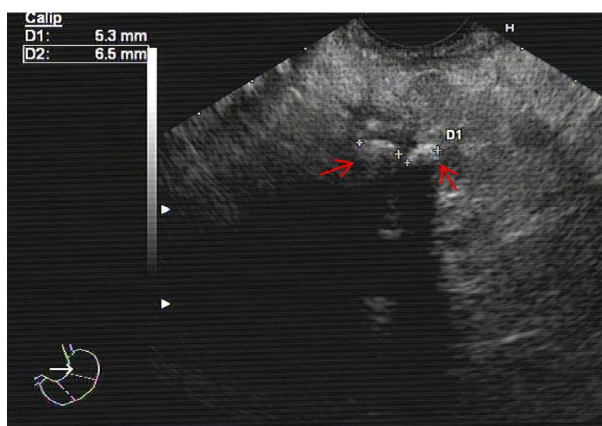


Figure 1. Presence of two lithiasis in the main pancreatic duct (arrows) visualized by endoscopic ultrasonography.

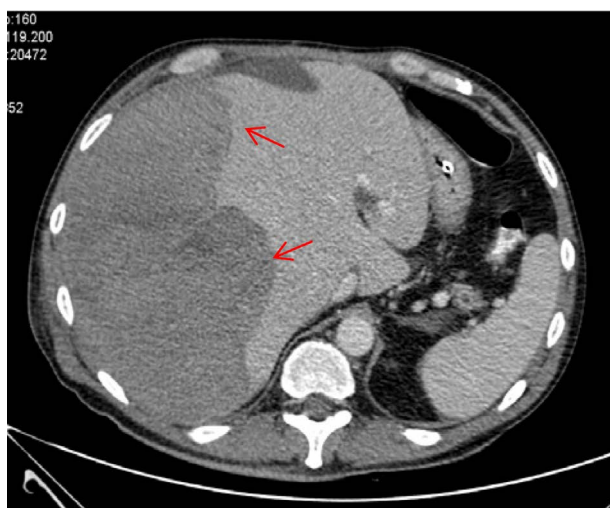


Figure 2. Abdominal CT scan reveals hepatic subcapsular hematoma with dimensions of $19 \times 17.8 \times 6.9$ cm (red arrows).

instability, selective embolization of right hepatic artery was performed, without any clear radiological improvement. Owing to further clinical deterioration, urgent surgical evacuation of the hematoma had to be undertaken 72 hours after the ERCP. In the postoperative period the patient presented infection of the collection, which indicated colocation of percutaneous drainage (Figure 3), and broad-spectrum intravenous antibiotics were administered over a period of six weeks. The patient gradually recovered and complete resolution of hematoma was seen in control CT scan, it being thus possible to withdraw the drainage catheter (Figure 4). He was discharged two months after admission in good condition.

3. Discussion

Endoscopic retrograde cholangiopancreatography (ERCP) is a minimally invasive procedure for diagnosis and treatment of biliary and pancreatic diseases. Even in the best hands, complications may occur in 2% - 10% of the cases, pancreatitis, cholangitis, perforation, and bleeding from papillotomy being the most frequent ones [1]. The overall mortality rate after a diagnostic ERCP is approximately 0.5%, while death rates after therapeutic ERCP are twice as high, and may occur from any of the complications described previously [4].

As a result, clinically significant hemorrhagic complications associated usually with previous papillotomy occur according to some series in 2% of all cases, although endoscopically visible bleeding is more frequent (between 10% and 30% of all papillotomies) [2].

On the other hand, hemorrhage or hematoma associated with ERCP involving the liver, abdominal cavity, spleen and bowel wall are rare but potentially serious complications and should be recognized and treated rapidly [5]. Subcapsular hepatic hematoma is exceptional, with only twenty cases described worldwide (Table 1). It is a condition that can be life-threatening, although no death has been reported so far.

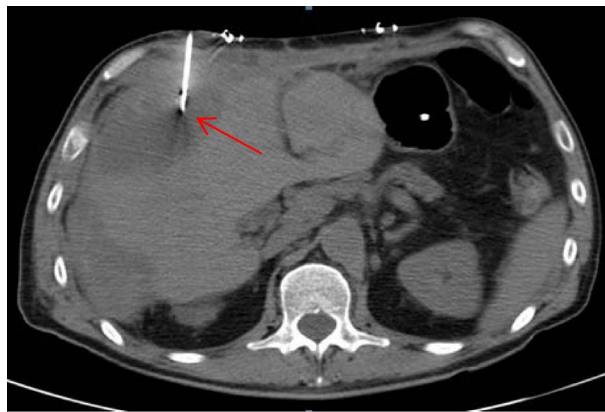


Figure 3. Colocation of percutaneous drainage guided by abdominal CT scan.



Figure 4. Resolution of voluminous hepatic hematoma observed on abdominal CT scan.

Table 1. Summary of cases of subcapsular hepatic hematoma after ERCP.

Nr	Author /year	Age	Sex	Diagnosis/ Indication	Guidewire	On-Set	First Symptom	Treatment	ATB
1	Ortega/2000	81	M	Common bile duct stone	NA	NA	Pain	Percutaneous drainage	Yes
2	Horn/2004	88	F	Pancreatic cyst	Yes	48 hrs	Pain Anemia	Observation	Yes
3	Chi/2004	43	F	Pancreatic cancer	Yes	NA		Embolization	Yes
4	Ertugrul/2006	41	M	Cholangio-carcinoma	Yes	48 hrs	Fever Pain	Observation	Yes
5	Priego/2007	30	F	Obstructive jaundice	NA	NA	Pain	Surgery	Yes
6	Petit/Laurent 2007	98	M	Common bile duct stone	Yes	NA	NA	Percutaneous drainage	NA
7	Bhati/2007	51	F	Common bile duct stone	Yes	NA	Pain Low AT	Percutaneous drainage	NA
8	McArt-hur/2008	71	M	Common bile duct stone	Yes	12 hrs	Pain Leucocytosis	Observation	Yes
9	De la Serna/2008	71	F	Common bile duct stone	Yes	48 hrs	Pain Leucocytosis	Observation	Yes
10	Cardenas/2008	54	F	Common bile duct stone	Yes	24 hrs	Pain. Anemia.	Observation	Yes
11	Nari/2009	15	F	Biliar pancreatitis	NA	NA	Fever Pain	Observation	Yes
12	Revuel-to/2010	41	M	Common bile duct stone	NA	6 hrs	Pain	Observation	Yes
13	Baudet/2011	69	F	Common bile duct stone	Yes	24 hrs	Pain. Fever. Anemia.	Embolization Surgery.	Yes
14	Perez Legaz/2011	72	F	Common bile duct stone	Yes	2 hrs	Pain. Anemia.	Surgery	NA
15	Del Pozo/2011			Common bile duct stone	Yes	5 days	Pain. Anemia	Observation	Yes
		96	M	Periapillary tumor	Yes	4 hrs	Pain.	Observation	Yes
16	Orellana/2012	49	M	Biliary stent occlusion	Yes	2 hrs	Pain Hypotense	Embolization	NA
		55	F	Gallbladder cancer	Yes	NA	Pain	Observation	NA
17	Fei/2013	56	M	Common bile duct stone	Yes	2 hrs	Fever	Percutaneous drainage	Yes
28	Current report	54	M	Main pancreatic duct stone	Yes	6 hrs	Anemia Pain Low AT	Embolization Surgery Percutaneous drainage	Yes

Abbreviations: Nr—number, M—male, F—female, NA—not available, hrs—hours, ATB—antibiotics, AT—arterial tension.

The etiology is not entirely clear. In most cases, however, hematoma occurred as the result of a rupture of a small calibre intrahepatic vessel caused by a guide wire. This would also explain the presence of air inside the hematoma and frequent infections, as use of guide wire is not a sterile technique [6]. In one case, the hematoma was a consequence of a traction of the extracting balloon in order to withdraw it from the biliary tree [7]. After a careful analysis, we came to the conclusion, that in our case, the hematoma could also have developed due to loop formation in the duodenum, which may be related to his previous surgery, and its subsequent traction. A similar mechanism has already been proposed in cases of splenic hematomas after ERCP [5].

As described by previous reports in the literature, the first symptom of most cases is abdominal pain, usually together with hypotension and fever. Thus, the presence of those should raise the suspicion of subcapsular hepatic hematoma [8]. However, according to some authors, the incidence of this complication might be underestimated, as many patients may not present any symptoms, and post-ERCP monitoring by imaging is not routinely

done [9].

Laboratory investigations are not helpful as major indicators of the development of subcapsular hepatic haematoma, except for low hematocrit. Imaging modalities (ultrasound, CT, and MRI) are the methods of choice for the diagnosis and control of this complication.

In most cases the management was conservative, as the hematoma can be contained by Glisson's capsule. This should be the treatment of choice provided the patient remains hemodynamically stable [10]. However, based on the literature, we recommend that prophylactic antibiotics be administered, since there is a substantial risk of infection of the hematoma [11], and in the majority of cases, patients were treated with antibiotics (Table 1).

Surgical treatment is reserved for patients with signs of hemodynamic instability or infection, or in cases of high risk of hematoma rupture or its growth [11]. It should consist of drainage of the hematoma, hemostasis if possible, and performing CT to monitor its evolution. Hepatic artery embolization [5] or percutaneous drainage [2] are valid alternatives to surgery. No long-term complications were described.

In the previously reported cases, three [7] [12] [13] were treated surgically and four [2] [8] [14] [15] were treated with percutaneous drainage.

In our case, the deterioration of general condition and hemodynamic instability forced us to indicate the surgical evacuation of the hematoma, since it was impossible to control the bleeding either by conservative treatment or by arterial embolization. Moreover, in spite of prophylactic antibiotics, the hematoma got infected, and percutaneous drainage had to be performed.

4. Conclusions

Subcapsular hepatic hematoma following ERCP is an infrequent complication, which, however, should be kept in mind in differential diagnosis of symptomatic cases after ERCP.

According to previous reports, it can appear as a result of manipulation with hydrophilic guide-wire and rupture of small intrahepatic vessels. In our patient with previous pancreatic surgery, we think it might have been a result of loop formation in the duodenum and its subsequent traction. The management is usually conservative. Treatment with embolization or surgery is usually reserved for more serious cases.

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